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Please use the table below as your cover sheet for the 1st page of the submission. The sheet should be before the cover/title page of your submission.

| | |
|---|---|
| Programme | |
| Module name | Data Driven Decisions for Business |
| Student Reference Number (SRN) | |
| Report/Assignment Title | Data Driven Decisions for BeeSafe Insurance |
| Date of Submission<br><br>*(Please attach the confirmation of any extension received)* | |

Declaration of Original Work:

- I hereby declare that I have read and understood BPP's regulations on plagiarism and that this is my original work, and that I have researched, undertaken, completed and submitted in accordance with the requirements of BPP School of Business.

- I declare that where I have used any AI tools, it was for the following reasons (highlight as appropriate):
  - ☐ To review a draft
  - ☐ To correct language errors
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  _____

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- The word count, excluding contents table, bibliography and appendices, is 2498 words.

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**BPP School of Business**

**DATA DRIVEN DECISIONS FOR BEESAFE INSURANCE**

**Table of Contents**

**Introduction and Project Plan**

***Purpose and Report structure***

The main purpose of this report is to identify the financial performances of BeeSafe Insurance over the mentioned years to signify its best insurance category for further business expansion. The company has recently used "AI and chatbot" for its Brazil market and increased the revenue generation amount. This report has analysed its dataset and explored the advantage of using such advanced tools in its revenue generation. Based on the identified value of BeeSafe Insurance in the Brazil market from the performance of 2023, the business also can make decisions on its future strategies on the subsidiaries and extend its business growth.

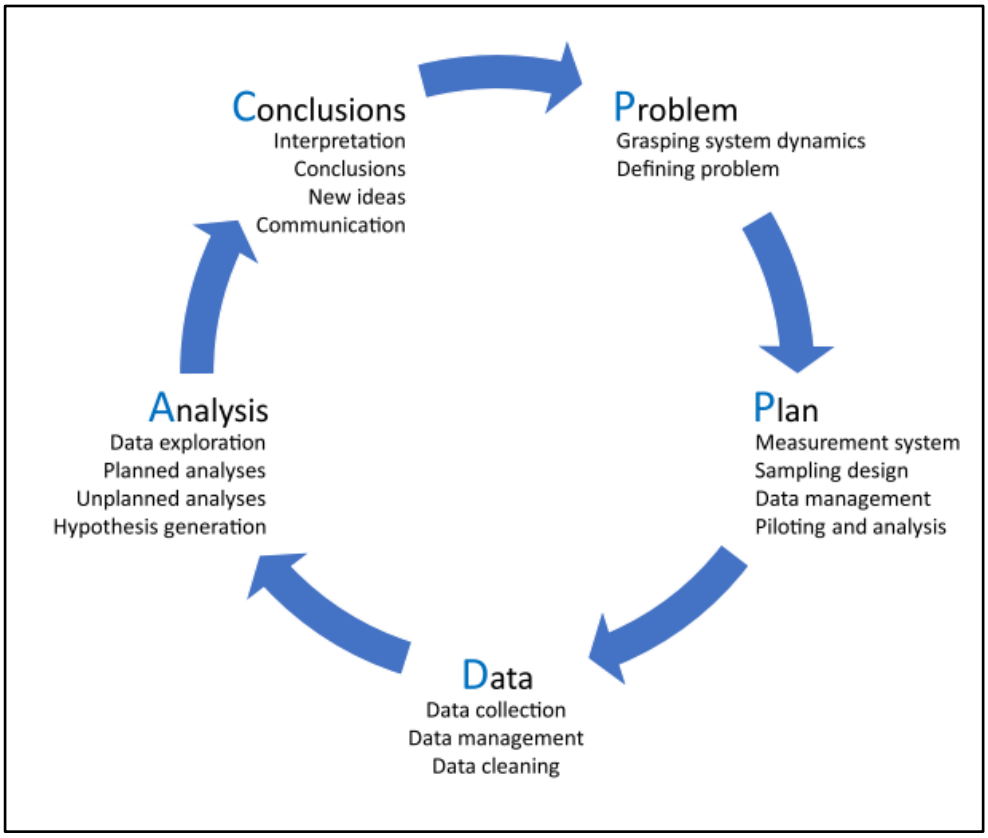



**Figure 1: PPDAC Framework**

(Source: Gehrke et al., 2021**)**

This report has followed the "PPDAC framework" in structuring the complete findings and reaching a data-driven outcome from the data analytic process. As per the study by Gehrke et al. (2021) "PPDAC framework" follows the stages of "Problem, Plan, Data, Analysis and Conclusion" in making a data-driven decision. Following these stages, the report has structured its entire finding and analysis part to deliver suitable recommendations on the process of data analytics and its impact on BeeSafe Insurnce's subsidiaries.

Problem: Lack of clarity on the research question creates difficulties to structure its further plan and make strategic recommendations to improve it. Clearly defined problems help to identify the areas of improvement and formulate the research question to focus its further outcome. This report has identified the problem of increased market competition of BeeSafe in the market and lack of clarity over the success of implementing AI and chatbots to increase its revenue amount in Brazil.

***Plan:*** Responsible data sourcing and management is necessary in the planning stage to conduct a strategic investigation process. This report has planned to identify the retention volume and revenue over the years and compare it with the performances of 2023 to justify the significance of AI and chatbot implementation.

***Data:*** This report has rectified the inconsistent and inaccurate data from the datasets to make an effective data-driven decision.

***Analysis:*** This report has analysed the financial performances of BeeSafe over the years and justify its success rate after the adoption of AI and chatbots.

***Conclusion:*** This research is going to draw its conclusion while adopting the AI and chatbot to make effective strategies in improving its financial performances in the subsidiaries.

***Justification of project plan***

The selection of the PPDAC framework has benefited this research to structure the complete data analytic process and develop a strategic planning to make decisions on AI and chatbot implementation. Following the stages of "PPDAC framework" this report has identified the problem at first, made a strategic plan and rectified the data for analysis, which justified its decision while reaching the conclusion.

***List of KPIs***

| KPIs | Measure |
|---|---|
| Customer Effort Score (CES) | Measure the value of customer put to reach towards a certain product or service of the company |
| Gross Profit Margin | Calculate the total generated profit from sales extracting the product or service cost |
| Customer Lifetime Value (CLV) | Identify the valuable consumer based on their transaction number over a certain period |

**Table 1: KPI metrics**

(Source: Self-created)

***Importance of data analytics in adding value***

Data analytic processes identify the data quality issues and make significant changes to mitigate the data problems. Based on the data analytic process, major errors in the dataset can be easily detected and maintain the data accuracy that generates the required outcome through financial analysis. Hence, based on the data analytics process, data-driven decisions can be taken to develop significant strategies or recommendations that mitigate the prior issues and support the business growth.

**Data quality issues and remedies**

***Generic problems and data quality issues***

Inaccuracy in the dataset or misleading information create generic issues to get the required outcome and conduct a complete data analysis process. Availability of inaccurate data and inconsistency in the dataset create issues to generate data-driven decision and value-based outcome in developing relevant strategies (Ivanov et al., 2025). The data quality issues in the dataset of BeeSafe Insurance has created challenges to identify the positive impact of AI and chatbots in increasing its revenue due to lack of accurate information. Hence, adopting the process of data deduplication and imputation quality issues in the dataset can be controlled and improve the quality of it in delivering data-driven decisions.

***Specific data quality issues in the datasets***

The dataset of BeeSafe Insurance has several inconsistencies, such as spelling error, negative value, null cells and misleading information that affect the data quality in generating required outcomes. For example, in the provided dataset of BeeSafe Insurance there are multiple errors in the name of the subsidiaries or countries, negative value or null cells. As per figure 2, some of the cells contain data that is named “Austra$$$$”, “2083”, “”Cyber ins%r$r$” and others that created inconsistency to measure its financial performances. The Availability of special characters and negative value in the dataset has created limitations to identify the exact value of BeeSafe’s financial performances and measure the right calculation. This report has aimed to measure the effectiveness of AI and chatbots in its 2023 performances in Brazil and identify possible strategies to improve its subsidiaries services in future following the result of it. Hence, the availability of such data quality issues creates limitations in this dataset to get an effective outcome and deliver a data-driven decision on its future business strategies.

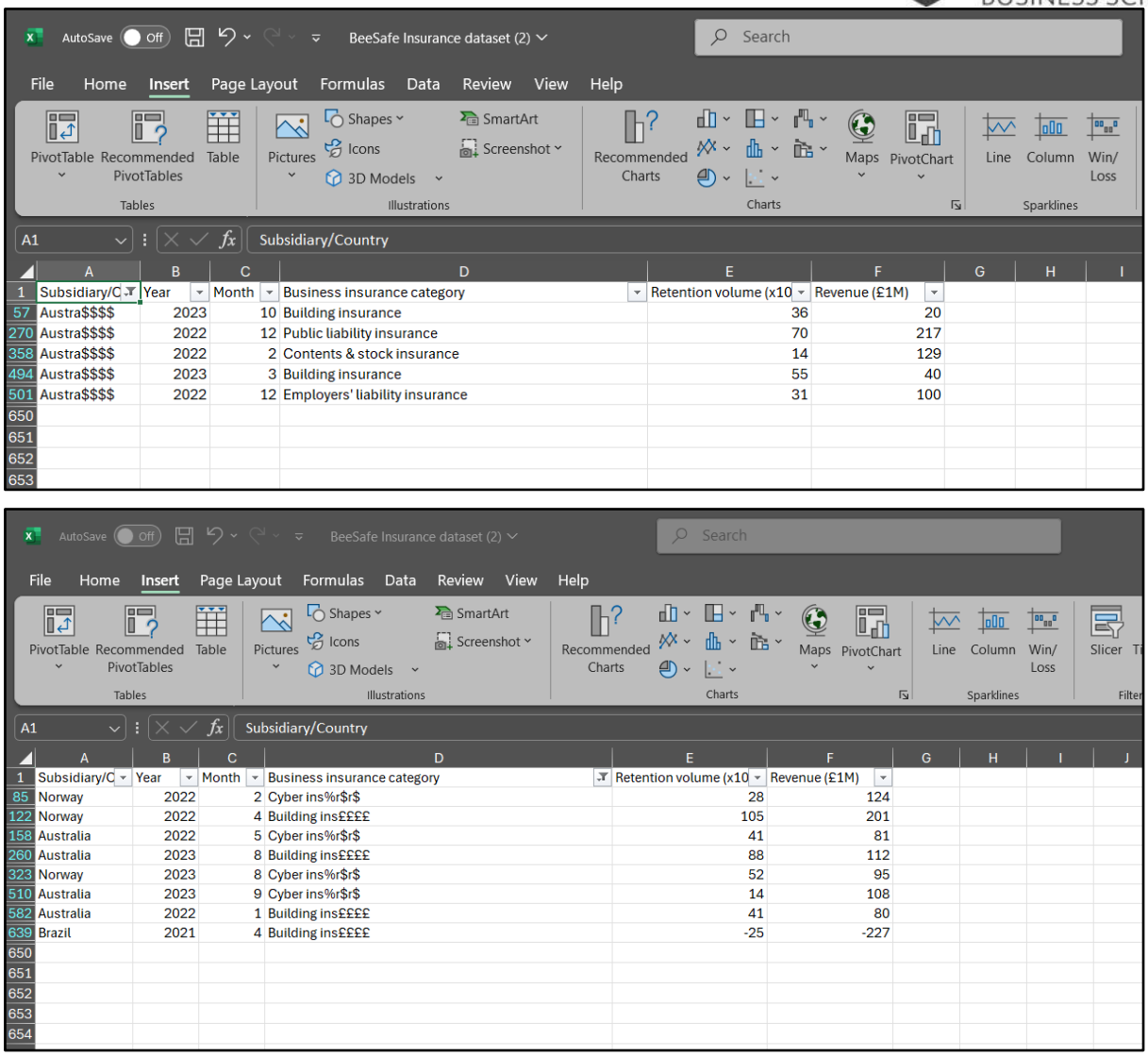
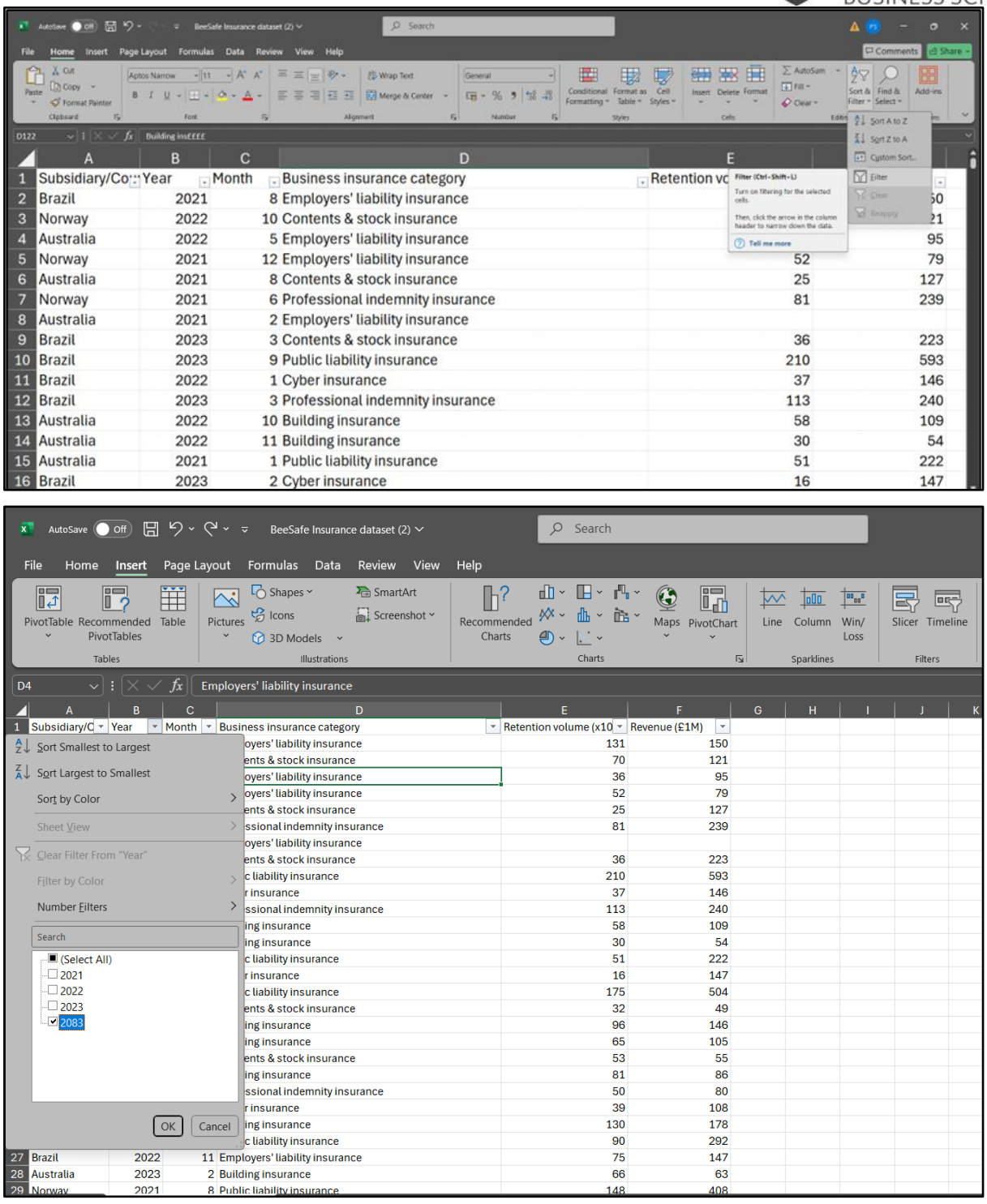



**Figure 2: Specific data quality issues in the dataset of BeeSafe Insurance**

(Source: Taken from excel)

***Remedies for mitigating data quality issues***

This report has adopted both the data deduplication and imputation process to eliminate the redundancy in the dataset and prepare the dataset for further analysis. For identifying the error in the dataset, firstly the entire data record has been selected and “sort &Filter” feature also applied. This process has simplified the process of identifying the data redundancy by clicking on the filter icon and identifying the error in the dataset. As per figure 2, this report has several errors, in subsidiary, year, insurance category and others that have been removed and deleted following the data imputation. Using the shortcut key “Ctrl + H” all the misleading information is replaced with the right information and reduces the quality issues. Hence, following such a process this dataset has been prepared for the final analysis process and meets the report purpose.



| | A | B | C | D | E | |
|---|---|---|---|---|---|---|
| 1 | Subsidiary/Co | Year | Month | Business insurance category | Retention vo | |
| 2 | Brazil | 2021 | 8 | Employers' liability insurance | | 50 |
| 3 | Norway | 2022 | 10 | Contents & stock insurance | | 21 |
| 4 | Australia | 2022 | 5 | Employers' liability insurance | | 95 |
| 5 | Norway | 2021 | 12 | Employers' liability insurance | 52 | 79 |
| 6 | Australia | 2021 | 8 | Contents & stock insurance | 25 | 127 |
| 7 | Norway | 2021 | 6 | Professional indemnity insurance | 81 | 239 |
| 8 | Australia | 2021 | 2 | Employers' liability insurance | | |
| 9 | Brazil | 2023 | 3 | Contents & stock insurance | 36 | 223 |
| 10 | Brazil | 2023 | 9 | Public liability insurance | 210 | 593 |
| 11 | Brazil | 2022 | 1 | Cyber insurance | 37 | 146 |
| 12 | Brazil | 2023 | 3 | Professional indemnity insurance | 113 | 240 |
| 13 | Australia | 2022 | 10 | Building insurance | 58 | 109 |
| 14 | Australia | 2022 | 11 | Building insurance | 30 | 54 |
| 15 | Australia | 2021 | 1 | Public liability insurance | 51 | 222 |
| 16 | Brazil | 2023 | 2 | Cyber insurance | 16 | 147 |



| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | Subsidiary/C | Year | Month | Business insurance category | Retention volume (x10 | Revenue (£1M) |
| | | | | oyers' liability insurance | 131 | 150 |
| | | | | ents & stock insurance | 70 | 121 |
| | | | | oyers' liability insurance | 36 | 95 |
| | | | | oyers' liability insurance | 52 | 79 |
| | | | | ents & stock insurance | 25 | 127 |
| | | | | ssional indemnity insurance | 81 | 239 |
| | | | | oyers' liability insurance | | |
| | | | | ents & stock insurance | 36 | 223 |
| | | | | c liability insurance | 210 | 593 |
| | | | | r insurance | 37 | 146 |
| | | | | ssional indemnity insurance | 113 | 240 |
| | | | | ing insurance | 58 | 109 |
| | | | | ing insurance | 30 | 54 |
| | | | | c liability insurance | 51 | 222 |
| | | | | r insurance | 16 | 147 |
| | | | | c liability insurance | 175 | 504 |
| | | | | ents & stock insurance | 32 | 49 |
| | | | | ing insurance | 96 | 146 |
| | | | | ing insurance | 65 | 105 |
| | | | | ents & stock insurance | 53 | 55 |
| | | | | ing insurance | 81 | 86 |
| | | | | ssional indemnity insurance | 50 | 80 |
| | | | | r insurance | 39 | 108 |
| | | | | ing insurance | 130 | 178 |
| | | | | c liability insurance | 90 | 292 |
| 27 | Brazil | 2022 | 11 | Employers' liability insurance | 75 | 147 |
| 28 | Australia | 2023 | 2 | Building insurance | 66 | 63 |
| 29 | Norway | 2021 | 8 | Public liability insurance | 148 | 408 |

**Figure 3: Remedies for mitigating data quality issues**

(Source: Taken from excel)

**Data analysis and commentary**

| Data and trends in total retention volume and revenue by month, by year across the 3 years period | | | | |
|---|---|---|---|---|
| Row Labels | Sum of Retention volume (x100 | Sum of Revenue (£1M | Average of Retention volume (x100 | StdDev of Revenue (£1M) |
| **2021** | **15,127** | **34,557** | **70** | **129** |
| 1st Quarter | 3,466 | 6,896 | 64 | 128 |
| 2nd Quarter | 3,785 | 9,453 | 70 | 142 |
| 3rd Quarter | 4,130 | 9,417 | 76 | 136 |
| 4th Quarter | 3,746 | 8,791 | 69 | 104 |
| **2022** | **15,553** | **37,924** | **72** | **132** |
| 1st Quarter | 3,310 | 8,083 | 61 | 107 |
| 2nd Quarter | 3,945 | 9,972 | 73 | 145 |
| 3rd Quarter | 4,237 | 10,379 | 78 | 128 |
| 4th Quarter | 4,061 | 9,490 | 75 | 146 |
| **2023** | **17,701** | **41,427** | **82** | **143** |
| 1st Quarter | 3,555 | 8,194 | 66 | 108 |
| 2nd Quarter | 4,524 | 10,385 | 84 | 123 |
| 3rd Quarter | 5,099 | 12,186 | 94 | 171 |
| 4th Quarter | 4,523 | 10,662 | 84 | 154 |
| **Grand Total** | **48,381** | **1,13,908** | **75** | **135** |

**Table A: Identified data trends on the revenue and retention volume**

(Source: Taken from Excel)

Table A has focused on the data trends of BeeSafe Insurance and identified the revenue and retention volume significantly over the last three years. Based on the comparative analysis of three years data based on the quarterly retention and revenue volume for identifying the data trends.

- Based on the record 2021, BeeSafe's total retention volume in 4 quarters has amounted to around 15,127 and the revenue volume is around 34,557 which increased significantly in 2022 and 2023.
- In 2023, the company's total retention volume was around 17,701 and revenue amount reached around 41,427 that identified its financial growth in the maximum insurance categories.
- Total amount of retention volume in these three years amounted to 48,381 and the revenue volume was 1,13,308 with the total revenue amount of €135 million.

Based on this dataset it has been identified that in 2022 the company has generated the rating of 61 on retention volume that significantly increases over the years and in 2023 it has experienced a significant growth after AI implementation.

| Benchmark comparisons of retention volume and revenue value between cities by quarter, by year across the 3-year period | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Column Labels | | | | | | | |
| | Australia | | Brazil | | Norway | | Total Sum of Retention volume (x1 | Total Sum of Revenue (£1 |
| Row Labe | Sum of Retention volume (x10 | Sum of Revenue (£1 | Sum of Retention volume (x10 | Sum of Revenue (£1 | Sum of Retention volume (x10 | Sum of Revenue (£1M) | | |
| **2021** | **3,525** | **8,391** | **6,740** | **15,396** | **4,862** | **10,770** | **15,127** | **34,557** |
| 1st Quarter | 789 | 1,609 | 1,578 | 3,419 | 1,099 | 1,868 | 3,466 | 6,896 |
| 2nd Quarter | 907 | 2,363 | 1,702 | 3,764 | 1,176 | 3,326 | 3,785 | 9,453 |
| 3rd Quarter | 974 | 2,327 | 1,843 | 4,402 | 1,313 | 2,688 | 4,130 | 9,417 |
| 4th Quarter | 855 | 2,092 | 1,617 | 3,811 | 1,274 | 2,888 | 3,746 | 8,791 |
| **2022** | **3,324** | **8,291** | **6,950** | **17,359** | **5,279** | **12,274** | **15,553** | **37,924** |
| 1st Quarter | 774 | 1,950 | 1,494 | 3,800 | 1,042 | 2,333 | 3,310 | 8,083 |
| 2nd Quarter | 904 | 1,978 | 1,739 | 4,423 | 1,302 | 3,571 | 3,945 | 9,972 |
| 3rd Quarter | 848 | 2,436 | 1,894 | 4,523 | 1,495 | 3,420 | 4,237 | 10,379 |
| 4th Quarter | 798 | 1,927 | 1,823 | 4,613 | 1,440 | 2,950 | 4,061 | 9,490 |
| **2023** | **4,053** | **8,547** | **8,243** | **20,027** | **5,405** | **12,853** | **17,701** | **41,427** |
| 1st Quarter | 953 | 1,961 | 1,527 | 3,627 | 1,075 | 2,606 | 3,555 | 8,194 |
| 2nd Quarter | 1,093 | 2,283 | 1,943 | 4,754 | 1,488 | 3,348 | 4,524 | 10,385 |
| 3rd Quarter | 1,026 | 2,498 | 2,569 | 5,878 | 1,504 | 3,810 | 5,099 | 12,186 |
| 4th Quarter | 981 | 1,805 | 2,204 | 5,768 | 1,338 | 3,089 | 4,523 | 10,662 |
| **Grand Total** | **10,902** | **25,229** | **21,933** | **52,782** | **15,546** | **35,897** | **48,381** | **1,13,908** |

**Table B: Comparison between countries based on retention volume and revenue value**

(Source: Taken from Excel)

This table has structured the retention volume and revenue value of BeeSafe Insurance in the last three years across its different countries, such as Australia, Brazil and Norway.

- Brazil generated the maximum amount of revenue in 2021 with the value of q15,396 which increased by 17,359 and 20,027 in the next two years.
- Australia generated the least amount of revenue in the last three years as in 2021 the amount was 8,391 and in 2023 it reached 8,547 only.

| | | |
|---|---|---|
| ⊞ 1st Quarter | 3,466 | 6,896 |
| ⊟ 2nd Quarter | 3,785 | 9,453 |
| Building insurance | 782 | 726 |
| Contents & stock insurance | 306 | 1,358 |
| Cyber insurance | 225 | 1,046 |
| Employers' liability insurance | 499 | 936 |
| Professional indemnity insuranc | 694 | 1,641 |
| Public liability insurance | 1,279 | 3,746 |
| ⊟ 3rd Quarter | 4,130 | 9,417 |
| Building insurance | 841 | 1,100 |
| Contents & stock insurance | 350 | 1,273 |
| Cyber insurance | 297 | 933 |
| Employers' liability insurance | 656 | 829 |
| Professional indemnity insuranc | 703 | 1,481 |
| Public liability insurance | 1,283 | 3,801 |
| ⊟ 4th Quarter | 3,746 | 8,791 |
| Building insurance | 873 | 1,116 |
| Contents & stock insurance | 336 | 1,272 |
| Cyber insurance | 219 | 1,046 |
| Employers' liability insurance | 518 | 818 |
| Professional indemnity insuranc | 716 | 1,418 |
| Public liability insurance | 1,084 | 3,121 |

| | | |
|---|---|---|
| ⊞ 1st Quarter | 3,310 | 8,083 |
| ⊟ 2nd Quarter | 3,945 | 9,972 |
| Building insurance | 762 | 1,601 |
| Contents & stock insurance | 353 | 1,313 |
| Cyber insurance | 290 | 901 |
| Employers' liability insurance | 592 | 820 |
| Professional indemnity insuranc | 677 | 1,411 |
| Public liability insurance | 1,271 | 3,926 |
| ⊟ 3rd Quarter | 4,237 | 10,379 |
| Building insurance | 837 | 1,179 |
| Contents & stock insurance | 312 | 1,529 |
| Cyber insurance | 301 | 1,239 |
| Employers' liability insurance | 710 | 949 |
| Professional indemnity insuranc | 840 | 1,677 |
| Public liability insurance | 1,237 | 3,806 |
| ⊟ 4th Quarter | 4,061 | 9,490 |
| Building insurance | 815 | 1,249 |
| Contents & stock insurance | 343 | 1,122 |
| Cyber insurance | 294 | 1,148 |
| Employers' liability insurance | 580 | 1,031 |
| Professional indemnity insuranc | 750 | 1,149 |
| Public liability insurance | 1,279 | 3,791 |

| | | |
|---|---|---|
| ⊞ 1st Quarter | 3,555 | 8,194 |
| ⊟ 2nd Quarter | 4,524 | 10,385 |
| Building insurance | 963 | 1,331 |
| Contents & stock insurance | 454 | 1,475 |
| Cyber insurance | 203 | 1,195 |
| Employers' liability insurance | 665 | 1,056 |
| Professional indemnity insuranc | 972 | 1,763 |
| Public liability insurance | 1,267 | 3,565 |
| ⊟ 3rd Quarter | 5,099 | 12,186 |
| Building insurance | 1,066 | 1,478 |
| Contents & stock insurance | 498 | 1,632 |
| Cyber insurance | 291 | 1,229 |
| Employers' liability insurance | 620 | 1,160 |
| Professional indemnity insuranc | 1,019 | 2,065 |
| Public liability insurance | 1,605 | 4,622 |
| ⊟ 4th Quarter | 4,523 | 10,662 |
| Building insurance | 871 | 1,558 |
| Contents & stock insurance | 472 | 1,376 |
| Cyber insurance | 341 | 1,135 |
| Employers' liability insurance | 680 | 1,089 |
| Professional indemnity insuranc | 845 | 1,539 |
| Public liability insurance | 1,314 | 3,965 |
| **Grand Total** | **48,381** | **1,13,908** |

**Table C: Comparison between retention volume and revenue value based on business insurance category**

(Source: Taken from Excel)

This table has identified the best and lowest performing service categories of BeeSafe Insurance based on its retention volume and revenue value.

- In the first quarter of 2021, the company has generated around 2,331 revenue value and 1,010 retention volume which led to 3,965 and 1,314 significantly in 2023.
- Cyber insurance has generated only 1,135 in its revenue value in 2023 which is recorded as the lowest value among all the other services.
- Building insurance has secured the position of second based service category with the revenue value of 1,558 and retention volume of 871 in 2023.

**Data charting and commentary**

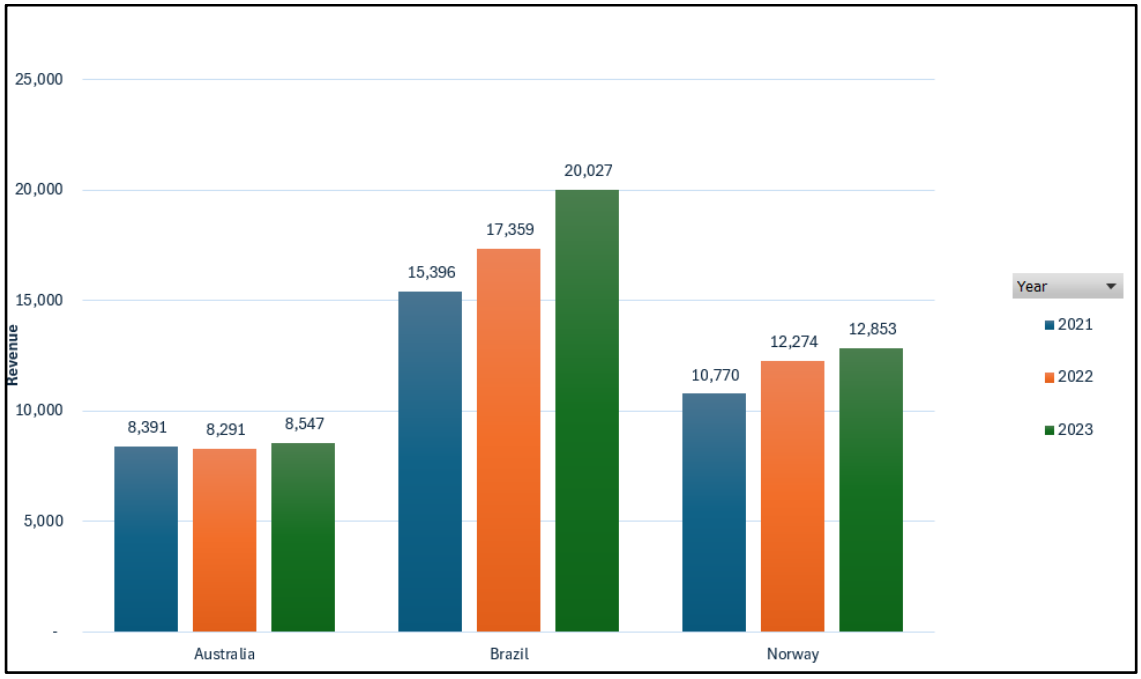



**Chart A: Comparison of revenue across countries over time**

(Source: Taken from Excel)

The comparative analysis on different operating cities of BeeSafe Insurance has identified the financial growth and where the company should take action for improvements.

- In 2021, Australia's revenue amount was 8,391 which decreased to 8,291for poor performance in the different service categories. However, in 2023, the company generated around 8,547 in its total revenue in the Australian market.
- The company has generated its maximum amount of revenue in the Brazil market and after AI chatbot implementation it has reached to around 20,027 where the revenue of Norway in the same year reached to 12,853.
- Australia has been identified as the low performing country for the company and Brazil generated the maximum amount of revenue at the end of three years financial performances.

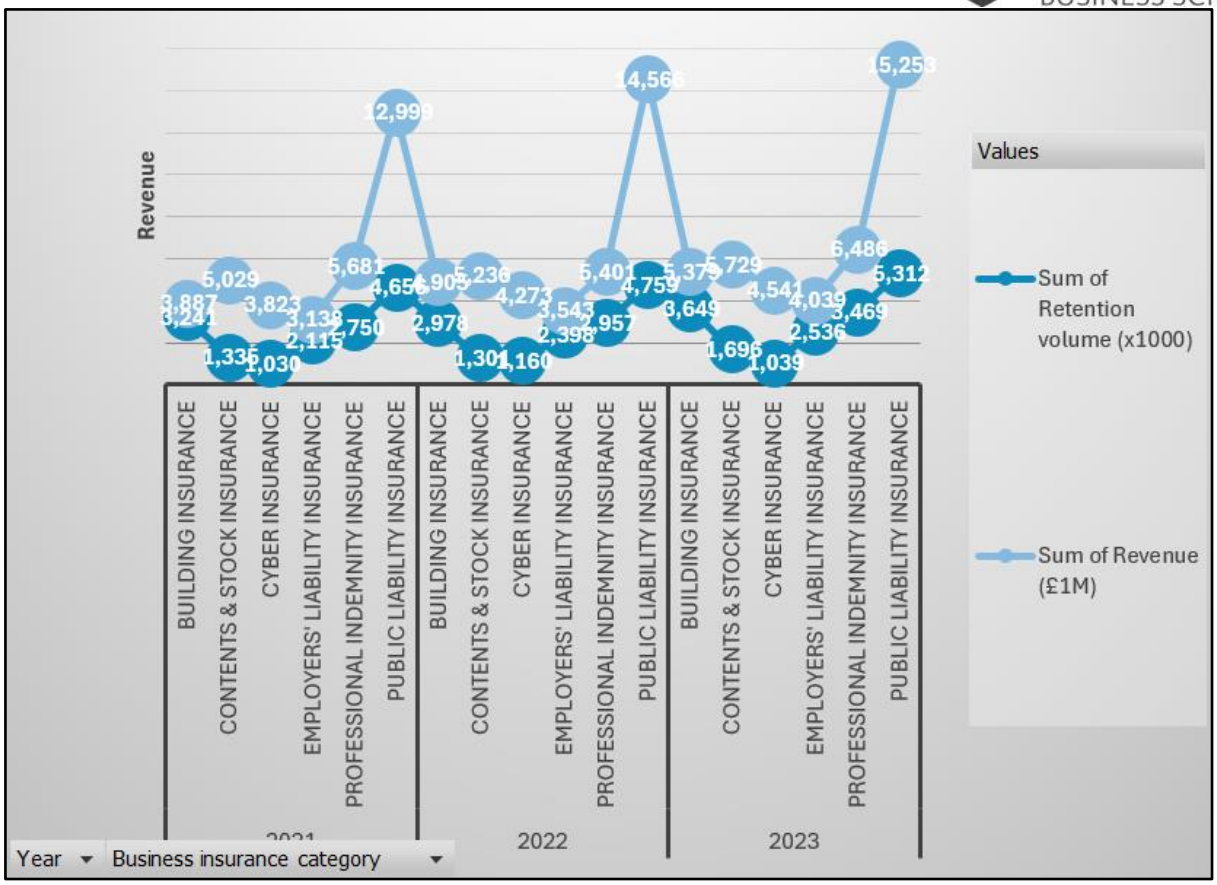



**Chart B: Comparison between the service categories based on retention volume and revenue across three year period**

(Source: Taken from Excel)

The chart B has identified the amount of retention volume and revenue of BeeSafe Insurance in the last three years based on the service categories.

- Public liability insurance has generated the maximum revenue in all the three years compared to other services and identified as the best performing product of the company compared to other service categories.
- In 2021, the retention volume of public liability insurance was 4,656 and the sum revenue was £12,999 which reached 5,312 in 2023 with the revenue amount of £15,253.
- Cyber insurance has generated less amount of revenue in all the three years as in 2023 the revenue amount of this service was £4,541.

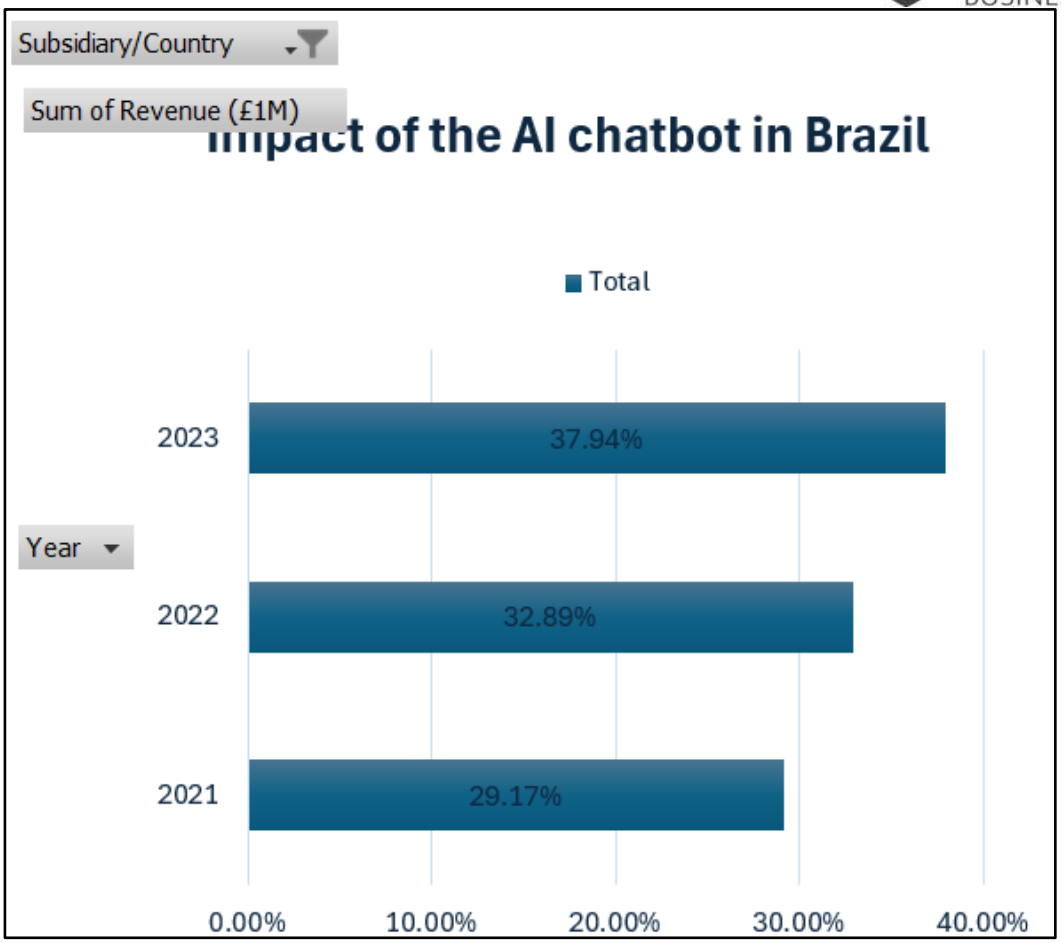



**Chart C: Comparison between revenue amount in the Brazil market in the last three years**

(Source: Taken from Excel)

This chart has identified BeeSafe Insurance's major success in 2023 after the adoption of AI chatbots in its services.

- In the Brazil market BeeSafe's generated revenue amount was 29.17% and in 2022 the volume increased to 32.89% for its success in the different insurance categories in Brazil.
- In 2023, the revenue amount reached to around 37.94% which is counted as the highest revenue amount in the last three years and measured as 100% based on the total of all three years of revenue.

As per chart C, BeeSafe Insurance has generated the maximum amount of revenue in 2023 after adopting the AI chatbots in its services. Hence, based on the improved financial performances, the company can use AI chatbots for its subsidiaries to get positive outcomes in its future financial performances.

**Conclusions and recommendations**

***Conclusions***

This report has improved the accuracy of results regarding identification of best performing market, product and impact of AI chatbot due to the implementation of data analytics. Effective evaluation of

financial performance through data analytics has helped this report to suggest BeeSafe to expand into local markets. Chart A has clearly indicated that Brazil is the best performing market of the company. Considering this factor BeeSafe needs to expand its operational approaches in the Brazil market. From Table C it has been identified that public liability insurance is the best performing service category of BeeSafe while cyber insurance is the least performing category across three years and 4 quarters. Concentrating on this approach, the marketing team of BeeSafe needs to lower the investment on cyber insurance and use that resource for marketing of public liability insurance for generating better values for consumers. On the other hand, the sales of Brazil in 2023 are 7% higher in comparison to the 2021. Such a hike in the revenue making approaches in Brazil in 2023 has indicated the positive impact of AI chatbot implementation. Such boost has indicated that BeeSafe needs to implement such technology on other operating markets to improve the revenue generating approaches positively.

***Recommendations***

***Implementing AI-generated tools in data record to improve quality issues***

Several issues in the data set of BeeSafe can be seen which might put limitations before the accuracy of data analysis. Implementation of digital technology might help the firm to avoid data quality issues like duplicate data during data collection or data registering. Big data analytics might be helpful in terms of maintaining accuracy during data collection (Karunarathna et al., 2024). Implementation of big data analytics would significantly help BeeSafe to avoid data quality issues during data collection. It would also help in elimination of manual error of data collection and the issues of duplicate data or missing values in data sets can effectively be avoided. Eventually the mitigation of data quality issues would contribute to generating more accurate and insightful data driven decisions for the future growth of the firm.

***Providing data analytics training to employees in performance management***

Inappropriate ICT skills of the employees of BeeSafe can be assumed as a major reason for the identified issues in the data set. Consideration of technical training to the employees would help in improving their skills and avoiding the issues of faulty data inclusion. Mastering data analytics tools would help the employee to contribute in data driven decisions and improve the productivity of the firm (Ikegwu et al., 2022). It would support the employees as well as the firm to take minimum time in decision making and maximizing the time for execution of a decision. Faster decision making would also help the firm to strategize their operation for coping up with the increased competition from major firm like Axa and Aviva.

***Evaluating franchising mode of market entry to enter the Brazil market***

As per the analysed data Brazil market is the most potential market of BeeSafe and entering in this market would bring the most economic benefit to the firm. Despite the right selection of the market,

an inappropriate method of market entry would limit the efficiency of the firm during operating that market. Franchising method of market entry would provide access to the knowledge of the local market (Alon et al., 2021). Utilisation of this knowledge would help the firm to identify the preference of Brazilians regarding insurance selection and inclusion of those preferences in the product category of BeeSafe would help in obtaining success.

**References**

Alon, I., Apriliyanti, I.D. and Henríquez Parodi, M.C., (2021). A systematic review of international franchising. *Multinational Business Review*, *29*(1), pp.43-69. Available at: http://dx.doi.org/10.1108/MBR-01-2020-0019. (Accessed: 30 April 2025)

Gehrke, M., Kistler, T., Lübke, K., Markgraf, N., Krol, B. and Sauer, S., (2021). Statistics education from a data-centric perspective. *Teaching Statistics*, *43*, pp.S201-S215. Available at: https://onlinelibrary.wiley.com/doi/pdf/10.1111%2Ftest.12264. (Accessed: 30 April 2025)

Ikegwu, A.C., Nweke, H.F., Anikwe, C.V., Alo, U.R. and Okonkwo, O.R., (2022). Big data analytics for data-driven industry: a review of data sources, tools, challenges, solutions, and research directions. *Cluster Computing*, *25*(5), pp.3343-3387. Available at: https://doi.org/10.1007/s10586-022-03568-5. (Accessed: 30 April 2025)

Ivanov, A., Petrova, O. and Pavlov, D., (2025). Quality Management Data-Driven Decisions Fail and How to Fix It. *National Journal of Quality, Innovation, and Business Excellence*, *2*(1), pp.1-10. Available at: https://doi.org/10.17051/NJQIBE/02.01.01. (Accessed: 30 April 2025)

Karunarathna, I., Gunasena, P., Hapuarachchi, T. and Gunathilake, S., (2024). Comprehensive data collection: Methods, challenges, and the importance of accuracy. *Uva Clinical Research*, pp.1-24. Available at: http://dx.doi.org/10.13140/RG.2.2.13134.47689. (Accessed: 30 April 2025)

## Appendices

## Appendix 1: BeeSafe Insurance Dataset

| Sum of Revenue (£1M) | Column Label | | | |
|---|---|---|---|---|
| Row Labels | 2021 | 2022 | 2023 | Grand Total |
| Australia | 8,391 | 8,291 | 8,547 | 25,229 |
| Brazil | 15,396 | #### | #### | 52,782 |
| Norway | 10,770 | #### | #### | 35,897 |
| **Grand Total** | **34,557** | **####** | **####** | **1,13,908** |